# MTS Time Series

## Market and Data Description for The European Bond and Repo Database

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## 1. An overview of the MTS Time Series database

The MTS database contains daily cash and repo information and high frequency trade and quote data, for a large number of European sovereign bond markets. The coverage of the database is bound to increase along with the planned expansion of MTS into new markets. Therefore, for the sake of this introduction, we refer to the data contained in the first month of the database, April 2003.

As of April 2003, the first month of available data, the database includes sovereign trade data for the following countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal and Spain. Some quasi-government are also included. A cross sectional reference file contains the details of each bond issue.

MTS data is entirely provided by the MTS interdealer markets: EuroMTS, EuroCredit MTS and the various domestic MTS markets. **EuroMTS** is the reference electronic market for Euro benchmark bonds, or bonds with an outstanding value of at least €5 billion. In April 2003, the bonds traded on this market are from 15 government and quasi-government issuers, namely Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal, Spain, Depfa, the European Investment Bank, Freddie Mac and Kreditanstalt für Wiederaufbau. **EuroCredit MTS** is the reference electronic market for benchmark covered bonds with an outstanding value of at least €3 billion. In April 2003, examples of the bonds traded on this market are Pfandbriefe, Obligations Foncières and Cédulas Hipotecarias. **MTS Domestic Markets** list the whole yield curve of the government bond market of the respective European country.

In April 2003, MTS Time Series covers 769 bonds approximately 88% of which are government bonds, 5% are quasi-government bonds and 7% are structured bonds. All the bonds included in the first month of the MTS Time Series are denominated in Euros, however, more recent data includes information on domestic currency Danish and Polish government bonds. Government bonds are issued by Treasuries and Local Governments (e.g. Länder bonds in Germany). Quasi-government bonds are issued by national (e.g. Caisse d'Amortisement de la Dette Sociale in France, Freddie Mac in the USA and Kreditanstalt Fur Wiederaufbau in Germany) and international public institutions (e.g. European Investment Bank). Structured bonds include asset back securities and covered bonds. Furthermore, the data contains also information on repo contracts traded on the MTS markets.

For each month the cash data is organised into three files and the repo data is arranged into two additional files. Monthly updates for each file are provided. To simplify the data archiving process, each file name ends with the first three letters of the month and the last two digits of the year that the data refers to.

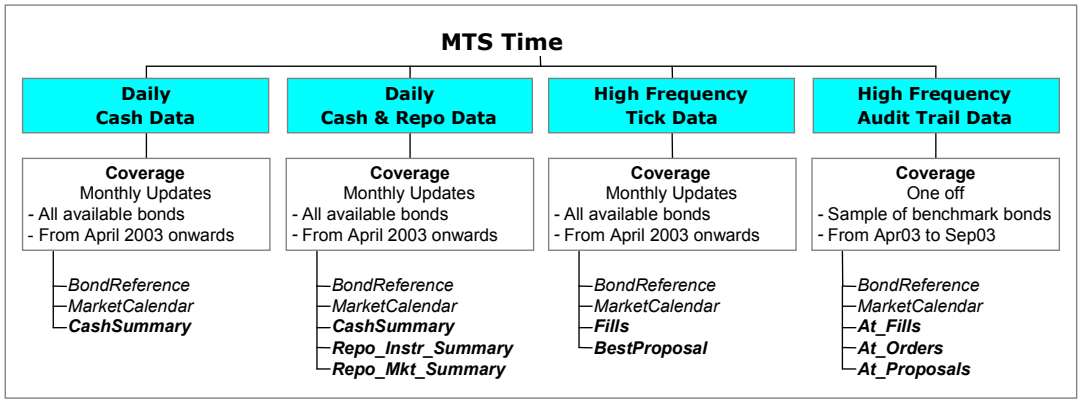


Figure 1. MTS Time Series database structure and file names.

For those interested in market microstructure issues the Fills and Best Proposals files contain information on the trades and the best three quotes that occurred throughout each day for all bonds in the database. In particular, the best proposals file records every submitted quote that improves price and/or size for the top three bid and offer prices in the market. Detailed information on how proposals and orders are matched into trades can be inferred from the Audit Trail files. These files cover the six-month period from April to September 2003 for a sample of benchmark bonds, which are representative of different national markets and of different maturity buckets. For those interested in traditional fixed income issues the Cash Summary file contains raw as well as processed daily data. It includes information on three price variables (trade price, mid-quote price, and yield), two risk variables (modified duration and convexity) and four liquidity variables (total traded volume, average trade size, average bid/ask spread and trade imbalance). The price variables provide the price for the last executed transaction and posted quote at or before 5pm Central European Time (CET) for each bond in the database. If a bond does not trade before 5pm CET the trade price observation is missing.

The MTS database also includes daily summary repo rates and repo transaction amounts in the Repo Instrument Summary file. An additional Repo Market Summary file contains daily information on the total value traded in Repo contracts and the total value traded for the two subcategories of General Collateral and Special Repo contracts.

The tick-by-tick, daily and repo information can be cross-linked through a separate Cross Sectional file that contains the salient details of all bonds in the database. Furthermore, a Market Calendar file with market events including holidays, trading incidents and suspensions is provided. An overview of the structure of the MTS database is provided in Figure 1.

In summary the MTS database allows for comparative studies of the microstructure, bond time series and repo markets of several large, mid-size and small European bond markets.

In mid-June 2005 the old Telematico platform was replaced with a new TradeImpact system. Currently, the source of all the cash market information is the Cash Market Facility (CMF) whereas all repo information comes from the Money Market Facility (MMF) of the TradeImpact system.

## 2. The TradeImpact System for Bonds

TradeImpact is a trading platform that enables trade negotiations and settlements for European Government and quasi-government bonds. Trading on this platform is anonymous, that is the counterpart is disclosed only after the trade is executed.

European (sovereign, quasi-sovereign and mortgage) bonds that satisfy certain requirements, in terms of principal amount outstanding and number of dealers available to act as market makers, are allowed to acquire the Euro benchmark status. Euro benchmark bonds are admitted to trading on the EuroMTS market. This means that some bonds trade on both the domestic MTS market and EuroMTS. The liquidity of these bonds is, therefore, fragmented between the Euro benchmark and the domestic markets. Because no explicit link has been built between these two markets, possible differences in prices and/or liquidity supplies across markets may emerge. MTS relies on the transparency of the systems to provide an effective informational link between the markets, so that arbitrageurs immediately eliminate any discrepancy. Market participants can subscribe to information systems, which provide timely updates on the best five quoted prices and about the aggregate quantity available at those prices on either side of each market. Furthermore, MTS provides timely updates of overall market statistics.

There are two types of market participants: *primary dealers* and *dealers*. Primary dealers are required to continuously formulate two-way proposals on a given number of bonds for a pre-set minimum amount. These proposals remain valid for the whole day if they are not cancelled, updated, automatically matched or hit by an incoming order. Primary dealers may also formulate proposals on any other tradable product and issue orders for proposals formulated by other market participants. Primary dealers have the option of rejecting orders with quantities lower than the minimum tradable quantity. When posting quotes, in addition to specifying price (and/or yield), primary dealer must specify also *block* and *drip* quantities. The block quantity is the overall size for the proposal whereas the drip quantity is the part of the proposal that must be made visible to the rest of the market. These are analogous to hidden orders or iceberg orders of electronic equity markets. The market establishes the maximum period during which primary dealers are allowed to suspend their quoting services.
Primary Dealers are also allowed to post single-sided proposals which are called Fill-and-Store (FAS) orders. These are just limit orders and are executed at a price/yield which is not inferior to the specified price/yield with any residual unfilled size stored in the order book until either cancellation or full execution.
Dealers instead can only issue orders for proposals formulated by primary dealers. In summary, primary dealers can act as both price makers and price takers whereas dealers are price takers only.

We analyse a one-day sample of transaction data, 12 December 2002. With reference to trades for the Italian BTPs in the sample data, some dealers (8) are members of only the domestic market and quote only for the domestic market. Some other dealers (7) are members of the European market and post quotes only for the European market. The majority of dealers are members of both markets and are allowed to parallel quote, namely they post their quotes on both markets simultaneously. Parallel quotes have the same price although may specify

different sizes on the domestic and Euro benchmark markets.[1] Primary dealers posting parallel quotes cannot be hit twice on the same proposal because whenever a proposal is aggressed in one market the dealer's position is immediately updated on both markets.

Interestingly, most of primary dealers use customised software to automatically post and update proposals. Always more sophisticated software programmes are becoming available. Dealers can programme in the type of spread they wish to maintain throughout the trading day and quotes change automatically based on prices taken elsewhere (for example from Reuters or Bloomberg). The introduction of electronic market systems has increased market-making competition leading to tighter spreads and, therefore, lower revenues from market-making activities. However, dealers still choose to offer market-making services as primary dealers because of the special relationship they acquire with the issuer. In fact, they are often involved in primary auctions and receive market and policy information directly from the issuer.

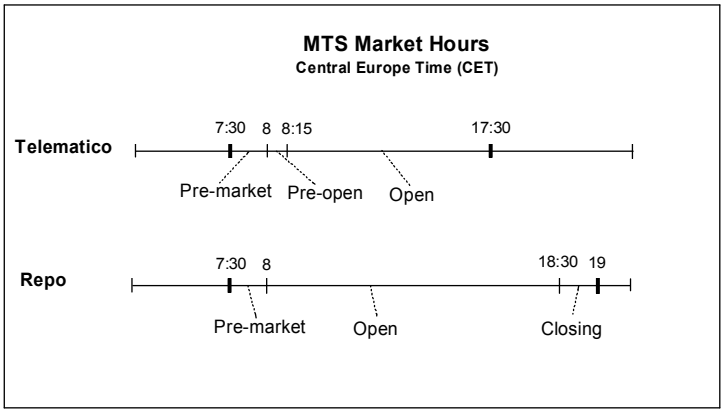


**Figure 2.** MTS market hours for the CMF and the MMF trading platforms.

The European MTS cash markets, which trade on the CMF platform, are characterised by four phases: *pre-market (7:30am-8:00am CET)*, *pre-open (8:00am-8:15am CET)*, *open (8:15am-5:30pm CET)* and *closed*. In the pre-market and pre-open phases members can post proposals and submit orders. The market ranks the best proposals applying price-time priority. However, during this phase, there is no automatic matching of proposals. Automatic matching of proposals is only active when the market is open. No trading is allowed when the market is closed.

The market aggregates the proposals available at the best five price levels on either side of the market. Aggregated drip quantities for these best five price levels are shown to the rest of the market. Because trading is anonymous, the identity of the primary dealers contributing to the best five price levels is not broadcasted. These best quotes are updated every time there is a new proposal that improves price and/or size at the top five price levels or when a proposal is changed (this includes cases when a proposal becomes temporarily unavailable by being suspended) or after a fill. Note that, during periods of high trading intensity the market may

[1] Most of the dealers that are allowed to parallel quote seem to have a preferred market for entering their parallel quotes. However, large dealing houses that have branches and traders both in and out of the local market may enter their parallel quotes on either the domestic or the European market.

not update the best proposals after every specific event that affects the top 5 prices but updates are generated at least once every second for market participants. On the other hand, the process recording best prices from the market contains a throttling mechanism that may take only the last value of several proposals during market peaks.

Fills can be the result of either orders hitting standing proposals or automatic matching of marketable proposals. Orders will generate more than one fill when they are matched with more than one of the standing proposals. When matched proposals have different sizes, a fill is generated for the smaller quantity.

## *2.1. Cross-sectional data (BondReference)*

The cross sectional file identifies the salient characteristics of each bond in the database. Variables are included in the cross-sectional file if the information contained in the variable does not change frequently. To handle updates of infrequently changing variables we include the effective date for each entry. Moreover, the same bond may trade on alternative venues, for example bonds that have acquired the Euro benchmark status may trade on both the domestic and the European market. Therefore it is possible for a single bond (i.e. the same bondcode) to have several entries, one for each update in the value of one of the variables as indicated by a new reference date or because the bond traded in multiple markets as indicated by different market codes. Each entry includes the bond's ISIN, a unique code for each bond in the MTS database, and a text abbreviation of the bond's type. These two variables serve as a master link to all other files so that this cross sectional information can be linked up to the daily cash and repo time series and intra-day data.

**Table 1. Cross Sectional File (BondReference)**

This table describes the variables that are included in the cross sectional file. Note that a single bond may have multiple entries for two reasons. First the value of a variable may need updating and second some bonds trade in more than one market. In the former case multiple entries would be characterised by multiple reference dates. In the latter case a bond has more than one market code.

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| RefDate | Date/Time | Date at which this entry pertains to. | Date format: DD/MM/YYYY | 30/05/2003 |
| BondCode | Text | ISIN code. This can be used as a master key to link cross sectional with daily and intra-daily data. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. | BE0000282880 |
| BondType | Text | 3-letters text abbreviation of | Please refer to Appendix B for a list of possible values. | OLO |

| | | | | |
|---|---|---|---|---|
| | | bond type | | |
| Description | Text (Max 30 chars.) | Mnemonic text description for the bond | Bond type, maturity date (MM/YY) and coupon (blank if zero). | OLO 23 03/15 8,00% |
| MarketCode | Text | Code for the market where the bond is traded Note: if the bond trades on the domestic and the European market there will be two entries for the same bond code. | Please refer to Appendix C for a list of possible values. | BEL |
| EuroBenchMarkFlag | Numeric | Indicates whether the bond has benchmark status. | Possible values are: 1 = yes, 0 = no. | 0 |
| EuroBondFlag | Numeric | Flag saying whether the bond is a EuroBond. | Possible values are: 1 = yes, 0 = no. | 0 |
| Issuer | Text | The body that issued the bond | | BELGIAN TREASURY |
| IssuerCountry | Text | Two letter ISO code for originating country. | ISO 3166 values (please see http://www.iso.org/iso/en/prods-services/iso3166ma/02iso-3166-code-lists/index.html). | BE |
| IssuerType | Text | The general type of issuer. | Values are: Government, Quasi-Government, Structured. | Government |
| IssuerCategory | Text | Detail for category of issuer. | Possible values are: Asset backed securities, covered bonds (mortgage bonds), Domestic, Government agency, International, Local government, Supra national. | Domestic |
| IssueDate | Date/Time | The date at which the bond was first issued. | Date format: DD/MM/YYYY | 28/03/1995 |
| MaturityDate | Date/Time | Date at which bond expires. | Date format: DD/MM/YYYY | 28/03/2015 |
| CouponRate | Double | The percentage annual coupon | Missing value (.) if zero or floating rate. | 8 |

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| | | rate. | | |
| CouponType | Numeric | The coupon type. | Possible values are:<br>0 = Zero<br>1 = Fixed coupon<br>2 = Floating rate<br>3 = Indexed Rate *(value introduced from 02 Oct 06)* | 1 |
| CouponFreq | Numeric | The periodicity of coupon payments | Possible values are:<br>0 = Zero<br>1 = Annual<br>2 = Semi-annual<br>4 = Quarterly | 1 |
| DatedDate | Date/Time | Date from which interest starts accruing. | Date format: DD/MM/YYYY | 28/03/1995 |
| FirstCouponDate | Date/Time | Date of first coupon. | Date format: DD/MM/YYYY<br>Missing value (.) for zeros. | 28/03/1996 |
| LastCouponDate | Date/Time | Date of last coupon. | Date format: DD/MM/YYYY<br>Missing value (.) for zeros. | 28/03/2004 |
| Currency | Text | Currency of the bond. | | EUR |
| LotSize | Double | Lot size for the bond. | | 1,000,000 |
| DCC | Numeric | Day Count Convention. The convention used to calculate accrued interest. This is also related to the settlement formula. | Possible values **after** 01 Oct 06 are:<br>0 = Zero Coupon<br>1 = Actual/Actual<br>2 = Actual/365<br>3 = Actual/360<br>4 = Actual/366<br>5 = 30/360<br>6 = 30E+1/360<br>7 = 30E/360<br><br>Possible values **before** 01 Oct 06 are:<br>0 = Actual/Actual<br>1 = Zero Coupon<br>2 = 30E+I/360<br>3 = 30E/360<br>4 = Actual/365<br>5 = Actual/360<br>6 = Actual/366<br>7 = 30/360 | 0 |
| YieldFormula | Numeric | Yield formula. Only used when the instrument is yield-quoted. | Possible values **after** 01 Oct 06 are:<br>0 = None<br>1 = ZC simple *(Simple interest formula for Zero Coupons, Act/360, Act/365 or Act/366 convention)*<br>2 = ZC Compound *(Compound interest formula for Zero Coupons, Act/360, Act/365 or Act/366 convention)* | 0 |

| | | | | |
|---|---|---|---|---|
| | | | 3 = Fixed Rate *(Interest formula for Spread Coupons, reserved for future users)*<br>4 = One Year To Maturity *(Price/Yield conversion formula for annual coupon bearing bonds of less than one year to maturity, currently used only for a few Danish Government bonds with residual maturity below 1 yr)*<br><br>Possible values **between** 15 Sep 03 and 01 Oct 06 are:<br>0 = None<br>1 = Strip+CTZ<br>2 = ZC simple<br>3 = JGB Yield<br>4 = ZC Compound<br><br>Possible values **before** 15 Sep 03 are:<br>0 = None<br>1 = CTZ<br>2 = Strips + CTZ<br>3 = BOT365<br>4 = BOT360<br>5 = ZC Compound | |
| MinPriceTick | Double | Price Precision (or yield precision, in the case of yield quoted instruments). | Possible values: 0.00001, 0.001, 0.005, 0.01. | 0.001 |
| StripFlag | Numeric | Flag indicating that a Bond originated from a Coupon-stripping program. | Possible values are:<br>0 = no<br>1 = yes | 0 |
| EndGreyMarketDate | Date/Time | If bond trades prior to issue, this is the date that the bond is first deliverable. | Date format: DD/MM/YYYY<br>If no grey market, a missing value code (.) is given. | . |
| FirstSettlDate | Date/Time | First date that the bond settles | Date format: DD/MM/YYYY | 28/03/1995 |
| SettlDays | Numeric | Number of business days from trade to settlement date | Possible values are: 1, 2, 3, 4 | 3 |
| StartAllocDate | Date/Time | Date at which | Date format: DD/MM/YYYY | . |

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| | | bond is first allocated amongst primary dealers of the market specified above. | Data for this field is available from July 2003 onwards. | |
| StopAllocDate | Date/Time | Date at which bond is deleted from allocation amongst primary dealers. | Date format: DD/MM/YYYY<br>Data for this field is available from July 2003 onwards. | . |
| StartTradingDate | Date/Time | First listing date. Date upon which the bond is first listed for trading. | Date format: DD/MM/YYYY | 01/04/2003 |
| StopTradingDate | Date/Time | This is either the last trading day of the month or the date upon which bond is de-listed. | Date format: DD/MM/YYYY | 30/05/2003 |
| PartNumber | Numeric | Market makers and Price Takers enabled to trade this instrument on this specific market. | See also Cash Summary file. | 80 |
| NumObligation | Double | Number of Market Makers having this bond allocated for this specific market. | See also Cash Summary File.<br>Note: data for this field is available from July 2003 onwards. | . |
| ComplianceTime | Double | Quoting obligation features. Hours in a trading day that dealers must have an active quote. | Currently, quote obligations involve quoting a minimum quantity of a certain bond (e.g. 5 millions) within a bid offer spread (e.g. 4 price ticks), for a minimum cumulative amount of time (e.g. 5 hours).<br>Note: data for this field is available from July 2003 onwards. | . |
| MaxSpread | Double | The maximum spread that can be quoted. | | . |
| MinQuantity | Double | The minimum quantity that dealers can bid/offer. | | . |

## 2.2. *Daily Cash Data (CashSummary)*

The daily data, amongst other information, contains the clean price and some summary measures (e.g. daily average spread, total daily volume) for all the bonds in the database. Moreover as the same bond may trade domestically say via MTS Spain and European wide via EuroMTS. Therefore it is possible that a single bond may have two entries, one each for the domestic and European wide markets as indicated in the variable "marketCode". The last transaction (if any) that occurred at or before 5pm Central European Time (CET) is reported. As some bonds do not trade on a daily basis, mid-quote prices sampled at 5pm CET are also reported. Each entry includes the bond's ISIN and a text abbreviation of the bond's type. These two variables serve as a master link to all other files so that daily data can be linked up to the cross sectional, repo and tick-by-tick data files.

**Table 2. Daily Cash File (CashSummary)**
This table describes the variables contained in the daily cash file.

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| Date | Date/Time | Trading date | Date format: DD/MM/YYYY | 02/05/2003 |
| BondCode | Text | ISIN code. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. The bond code can be used as a master key to link daily with cross sectional and intra-daily data. | FR0100059601 |
| BondType | Text | Abbreviation of bond type | Please refer to Appendix B for a list of possible values. | BTA |
| MarketCode | Text | Code for the market where the bond is traded. | Please refer to Appendix C for a list of possible values. | FRF |
| RefTime | Date/Time | Time stamp for the last executed trade at or before 5pm CET (blank if there are no trades for the day). | Trades close to 5 pm are chosen to avoid the closing period where volatility is very high. | 16:57:00 |
| RefVerb | Numeric | Indicator variable for the sign of the last trade at or before 5pm CET. | Possible values are:<br>0 = buy<br>1 = sell<br>Missing value (.) if there are no trades for the day. | 1 |
| RefPrice | Double | Actual transaction price for the last trade at or before 5pm CET. | This field reports the flat price. If there is no trade for the day this field is blank. | 100.53 |
| MidPrice | Double | Flat Price Quote | Price collected from a quote at | 100.515 |

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| | | based on the average of best bid/offer prices at or before 5PM CET. | or before 5PM CET having b/o spread within 3*Basis Point Value (BPV) where BPV can be calculated. If the spread is beyond such limit then the b/o couple is assumed to be non-tradable and a mid-price is thus deemed non-representative. For FRNs there is no such threshold. | |
| MidYield | Double | Yield of the bond based on the mid-quote price. | Yield based on the last valid best proposals before 5pm CET. | 0.04883399 |
| MaxPrice | Double | The highest transaction price for the day. | | 109.24 |
| MinPrice | Double | The lowest transaction price for the day. | | 109.13 |
| WgtPrice | Double | The weighted average transaction price for the day. | | 109.1881818 |
| AccruedInterest | Double | Accrued interest reported on a one hundred par basis | | 4.764383562 |
| settlDate | Date/Time | Date of payment of the bond | Date format: DD/MM/YYYY | 6/2/2003 |
| ModifiedDuration | Double | The modified duration of the bond based on actual mid-quote price at or before 5 pm CET. | | 2.807494259 |
| convexity | Double | The convexity of the bond based on actual mid-quote price at or before 5 pm CET. | | 11.19724257 |
| partNumber | Numeric | No. of market makers and price takers enabled to trade this bond on this specific market. | See also cross sectional data. | 61 |
| NumObligation | Numeric | Number of participants allocated for this bond for this specific market. | See also cross sectional data. Note: data for this field is available from July 2003 onwards. | 6 |
| TotVolume | Double | Sum of nominal value of fill volume on this day. | | 55,000,000 |
| AvgSize | Double | Total fill volume | | 6,875,000 |

| | | | | |
|---|---|---|---|---|
| | | in a day divided by the number of trades. | | |
| Avgspread | Double | Average best bid/ask spread throughout the day. | Note that this measure is computed using only observations having b/o spread within 3*BPV where BPV can be calculated. If the spread is beyond such limit then the b/o couple is assumed to be non-tradable and an average spread is thus deemed non-representative. For FRNs there is no such threshold. | 0.026669915 |
| ImbTrade | Double | Aggregate buy initiated volume minus aggregate sell initiated volume | This corresponds to: SUM (fill side volumes where RefVerb=0) - SUM (fill side volumes where RefVerb=1) | 15,000,000 |

## *2.3. Tick-by-tick: Best Proposals (BestProposals)*

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| RefDate | Date/Time | Date of proposal update. | Date format: DD/MM/YYYY | 5/2/2003 |
| MarketCode | Text | Market in which best proposal update is posted. | Please refer to Appendix C for a list of possible values. | FRF |
| BondCode | Text | ISIN code for bond. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. | FR0100059601 |
| UpdTime | Date/Time | Time of calculation of best proposal. This is not always the time of proposal updates. Best proposals are updated at least every second during times of high market activity. | Time format: HH:MM:SS | 16:56:43 |
| TimeMSEC | Numeric | Milliseconds for the time of the proposal update. This information is essential for sorting quotes updated within the same second. | Time format: MMM | 567 |
| BidPrice1 | Double | Best bid (BB) price. | Instruments on TradeImpact | 100.51 |

| | | | | |
|---|---|---|---|---|
| BidYield1 | Double | BB yield, when the instrument is yield quoted. | can be traded by price or by yield. In the first case the yield field is not populated. | . |
| BidQty1 | Double | Size available at BB price. | | 2,500,000 |
| BidPrice2 | Double | Second best bid (2BB) price. | | 100.49 |
| BidYield2 | Double | 2BB yield, when the instrument is yield-quoted. | See above BidYield1 | . |
| BidQty2 | Double | Size available at 2BB. | | 5,000,000 |
| BidPrice3 | Double | Third best bid (3BB) price. | | . |
| BidYield3 | Double | 3BB yield, when the instrument is yield-quoted. | See above BidYield1 | . |
| BidQty3 | Double | Size available at 3BB price. | | . |
| AskPrice1 | Double | Best ask (BA) price. | | 100.55 |
| AskYield1 | Double | BA yield, when the instrument is yield-quoted. | See above BidYield1. | . |
| AskQty1 | Double | Size available at BA price. | | 2,500,000 |
| AskPrice2 | Double | Second best ask (2BA) price. | | 100.59 |
| AskYield2 | Double | 2BA yield, when the instrument is yield-quoted. | See above BidYield1. | . |
| AskQty2 | Double | Size available at 2BA price. | | 7,500,000 |
| AskPrice3 | Double | Third best ask (3BA) price. | | 10.61 |
| AskYield3 | Double | 3BA yield, when the instrument is yield-quoted. | See above BidYield1. | . |
| AskQty3 | Double | Size available at 3BA price. | | 2,500,000 |

**Note**: that we can have more than one entry per bond code depending on market code.

### *2.4. Tick-by-tick: Fills (Fills)*

| ***Variable*** | ***Type*** | ***Description*** | ***Notes*** | ***Example*** |
|---|---|---|---|---|
| RefDate | Date/Time | Date of trade | Date format: DD/MM/YYYY | 5/2/2003 |
| MarketCode | Text | Market View on which the trade occurs | Please refer to Appendix C for a list of possible values. | FRF |
| BondCode | Text | ISIN code for bond. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic | FR0100059601 |

| | | | | |
|---|---|---|---|---|
| | | | Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. | |
| Time | Date/Time | Time for the trade. | Time format: HH:MM:SS | 16:57:00 |
| TimeMsec | Numeric | Milliseconds for the time of the Trade. This information is essential for sorting trades executed within the same second. | Time format: MMM | 561 |
| Verb | Numeric | Buy/sell indicator. | Possible values:<br>0 = buy trade<br>1 = sell trade.<br>This refers to the market participant who is defined as the aggressor i.e. the participant that sent the order. Note that a trade can be executed when two different proposals specifying the best market prices are matching, i.e. when the bid (ask) price of a proposal is matching with the ask (bid) from another proposal. In this case, the proposal updated more recently will appear as the "aggressor" (i.e. the order side). In case of different overlapping prices, the execution price will be the one of the filler side. | 0 |
| Price | Double | Price of the trade. | | 100.51 |
| Quantity | Double | Size of the trade. | | 2,500,000 |
| Yield | Double | Yield of the trade. | Populated only when the instrument is yield quoted. | . |
| OrderSeqNo | Numeric | Sequence number of proposal/order that generated the trade (order side). | This field can be used to determine whether a same order /proposal originated one or more trades. | 567 |
| OrderStatus | Text | Indicates whether the originating order was completely filled or only partially filled (zero fills are not included). | Possible values are:<br>PF = Partially Filled orders,<br>CF = Completely Filled orders.<br>This field is left empty for trades generated by the automatic matching of two proposals. | PF |
| AggProfile | Text | The profile of the aggressor member on that market. | Possible values:<br>*Primary* (Market Maker)<br>*Dealer* (Market Taker) | Primary |
| MultMarketFlag | Numeric | True if the aggressor is also member of another market for that bond. | Possible values:<br>0 = False<br>1 = True | 0 |

| | | | | |
|---|---|---|---|---|
| ContractNo | Numeric | Unique sequence number for the generated trade. | | 678 |
| CCPFlag | Text | True if the trade went through a central counterparty. | Possible values:<br>FALSE<br>TRUE | FALSE |

**Note**: Cancelled trades are not included in the database.

## 3. The MMF Repo Market

A Repo contract is a financial agreement by which a party agrees to sell a bond at a given price with the understanding that it will be repurchased at an agreed price at a later date. The party that sells the bond via the repo agreement is said to "sell collateral" and is in effect borrowing to finance the original purchase of the bond. The party that buys the bond via the repo is said to "buy collateral" and is in effect lending money. Primary dealers and dealers, which have been authorised to trade on this platform, may post, change and cancel proposals or submit market orders for standing proposals. These market participants are authorised but not obliged to quote any repo product. Members may choose to use a central counterparty or to trade bilaterally. Proposals by both members of a central counterparty and bilateral only participants are either named or anonymous and have to specify a minimum quantity and a fixed or variable rate. Automatic acceptance of orders will immediately generate trades only when the orders are between two members of a central counterparty otherwise the counterparts will have to manually confirm the terms of the trade. At the end of the day the central system cancels standing proposals.

Repo contracts vary because of the type of collateral, special or general repo and because of the type of contract, classic or buy/sell back repo. In a special repo the parties agree to trade a specific bond. In a general collateral repo the member who sold collateral may define the bonds to be used as collateral at a later time – (up to 2 hours later). These bonds are chosen from a basket, which is defined by the exchange each trading day. For a buy/sell back repo the ownership of the bond is transferred to the cash lender whereas for a classic repo the ownership of the bond always resides with the original cash borrower.

On the new MMF orders for buy/sell back and classic repo contracts are consolidated on a single order book. The distinction between the two types of repo contracts is no longer dictated by the type of the bond which is used as collateral. Each member will declare whether he/she is willing to trade only buy/sell back, only classic or both repo contracts. The system will execute trades only between compatible members.

In addition, the MMF allows for flexible terms of the repo contract. That is, repo traders are no longer limited to trading standard repo term contracts (for example, Overnight, Tomorrow Next, etc.). Traders directly define the terms of the repo by providing Start and End dates for the repo contract.

The repo data contains the daily volume of collateral sold, daily measures of the repo interest rate and term agreed for all products in the database. This information is broken down into the bond used as collateral in the case of special repos and into the general category of the bond

in the case of general repos so it is possible that the user can aggregate the volume, repo rate and maturity distribution of repos by national market and repo type. For special repos one can match the repo rate with the yield on the underlying bond since the repo file includes the ISIN and the repo rate collected at or before 5pm CET. For general collateral repo rates can be matched with the yield on the underlying instruments only approximately as the underlying instrument is not specifically identified. The data is also aggregated by total special and general collateral traded in all markets for the day.

The European MTS repo markets have four distinct phases: *pre-market (7:30am-7:45am CET)*, *open (7:45am-6:30pm CET)*, *closing (6:30pm-7:00pm CET)* and *closed*. Note that the timing provided is the maximum operational time for the market. However, the length of the open phase varies with the type of contract and the type of market. French overnight contracts, for example, trade until 12:15am. The closing phase starts from the end of the open phase and usually lasts for 15 minutes.
In the pre-market phase primary dealers and dealers may start posting proposals. These proposals will be visible to other market members only when the market opens. In the closing phase no trading is allowed. Members use this time to define the bonds to be delivered as collateral for the General Collateral contracts executed during the previous open phase.

## *3.1. Instrument Summary*

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| RefDate | Date/Time | Trading date. | Date format: DD/MM/YYYY | 01/07/2003 |
| bondCode | Text | The ISIN number of the bond being repoed. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter.<br><br>Use as a master key to link daily with cross-sectional and intra-daily data. If the repo is a general collateral (GC), an alternative code is used (e.g. G.C. ITA). | - *Special*: DE000113502I<br><br>- *GC*: G.C. ITA |
| BondSegment | Text | Type of bond repoed. | Please refer to Appendix B for a list of possible values. | - *Special*: BSD<br>- *GC*: GCI |
| Description | Text (Max 30 chars.) | Description of collateral. If general collateral, use alternative general collateral code. | | - *Special*: DBR 04/01/07 6.00%<br>-*GC*: G.C. ITALY |

| | | | | |
|---|---|---|---|---|
| repoType | Text | | Possible values:<br>- G.C. = General Collateral repo;<br>- Special = Special repo;<br>- Special/General = special or General collateral repo;<br>- General = General repo. | Special |
| repoClass | Text | Class of repo. | Possible values:<br>- BuySellBack = Coupon belongs to buyer of collateral;<br>- Classic = Coupon is retained by seller of collateral. | BuySellBack |
| repoTerm | Text (Max 4 chars.) | Duration of repo. | Please refer to Appendix A for a list of possible values. | SN |
| TermDescription | Text (Max 20 chars.) | Description of duration of repo contract. | Please refer to Appendix A for a list of possible values. | SPOT NEXT |
| startDays | Numeric | Number of days from current date to start date. | | 2 |
| Enddays | Numeric | Duration of the loan expressed in days. | | 1 |
| Currency | Text | Currency of the repo. | | EUR |
| RefVerb | Text | Specifies the side of the last trade before 5pm. | Possible values are:<br>0 = BUY<br>1 = SELL<br><br>For JULY 2003, possible values are:<br>BUY<br>SELL.<br>This value is calculated from the point of view of the aggressor (this is either the side of the order or the side of the most recent proposal). | 0 |
| RefRate | Double | Repo rate (interest rate charged on loan) of the last trade before 5:00pm.This rate can be positive, negative or zero. | | 2.08 |
| refNomQty | Double | Nominal value of last contract traded before 5 pm. | | 5,000,000 |
| EndRate | Double | Repo rate. This refers to the last trade before 6:30pm (closing time). | | 2.08 |
| rateType | Text | Identification of the rate type. | Blank if not floating. | |

| | | | | |
|---|---|---|---|---|
| DeliveryType | Numeric | Type of delivery | Possible values are:<br>1 = Fixed Length;<br>2 = Fixed End Date;<br>3 = Fixed Start and End Dates. | 3 |
| startdate | Date/Time | Date the loan is granted. | Date format: DD/MM/YYYY | 03/07/2003 |
| Enddate | Date/Time | Date the loan is paid off. | Date format: DD/MM/YYYY | 04/07/2003 |
| MinRate | Double | Minimum negotiated repo rate for the day. | | 2.08 |
| avgRate | Double | Daily size-weighted average repo rate. | | 2.08 |
| maxRate | Double | Daily max repo rate. | | 2.08 |
| tradesNo | Numeric | Daily total number of negotiations. | | 1 |
| nomQty | Double | Daily total value of negotiated contracts. | | 5,000,000 |
| BuyNo | Numeric | Daily total number of buy-side contracts. | If there are no trades or only sell trades for the day this value is missing (.). | . |
| sellNo | Numeric | Daily total number of sell-side contracts. | If there are no trades or only buy trades for the day this value is missing (.). | 1 |
| buynomQty | Double | Daily total nominal value of buy-side contracts. | If there are no trades or only sell trades for the day this value is missing (.). | . |
| sellnomQty | Double | Daily total nominal value of sell-side contracts. | If there are no trades or only buy trades for the day this value is missing (.). | 5,000,000 |

## *3.2. Repo Market Summary*

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| refDate | Date/Time | Trading date | Date format: DD/MM/YYYY | 01/07/2003 |
| gcQty | Numeric (Comma) | Total nominal cash volume of general collateral transactions for the refDate. | | 30,141,500,000 |
| srQty | Numeric | Total nominal cash volume of special repo transactions for the refDate. | | 23,753,000,000 |
| overallQty | Numeric | Total nominal cash volume of special and general collateral repo transactions for the refDate. | | 53,894,500,000 |

# 4. Audit Trail Files

## 4.1. *Audit Trail Fills (*At_Fills*)*

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| RefDate | Date/Time | Trade date. | Date format: DD/MM/YYYY | 1/4/2003 |
| MarketCode | Text | Market view on which the trade occurs. | Please refer to Appendix C for a list of possible values. | MTS |
| BondCode | Text | ISIN code for the bond. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. | IT0001448619 |
| BondType | Text | Three-letters identifier for the bond type | Please refer to Appendix B for a list of possible values. | BTP |
| RefTime | Date/Time | Trade time. | Time format: HH:MM:SS | 15:26:36 |
| RefTimeMsec | Numeric | Milliseconds for the trade time. | Time format: MMM | 513 |
| Verb | Numeric | Side of the transaction taken by the member who acts as the aggressor. | Possible values:<br>0 = buy trade,<br>1 = sell trade. | 1 |
| SettlDate | Date/Time | Date of payment of the bond | Date format: DD/MM/YYYY | 4/4/2003 |
| Price | Double | Trade price. | | 110.9 |
| Quantity | Double | Trade size. | | 5,000,000 |
| Yield | Double | Trade yield. | Populated only when the instrument is yield quoted. | . |
| OrderSeqNo | Numeric | Sequence number of proposal/order that generated the trade (order side). | This field can be used to determine whether the same order /proposal originated one or more trades. | 95 |
| OrderStatus | Text | Indicates whether the originating order was either completely or only partially filled (zero fills are not included). | Possible values are:<br>PF= Partially Filled<br>CF= Completely Filled<br>This field is left empty for trades generated by the automatic matching of two proposals. | |
| ContractNo | Numeric | Unique sequence number for the generated trade. | | 204 |
| CCPFlag | Text | True if the trade went through a central counterparty. | Possible values:<br>TRUE<br>FALSE. | TRUE |
| UpdateTime | Date/Time | Time of the edit for the trade. | These fields have different values from RefTime only | 15:26:36 |

| | | | | |
|---|---|---|---|---|
| UpdTimeMsec | Numeric | Milliseconds for the time of the edit for the trade. | when a change of status (e.g. a cancellation) happens to an edit. | 524 |

## *4.2. Audit Trail Orders (*At_Orders*)*

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| MarketCode | Text | | Please refer to Appendix C for a list of possible values. | BEL |
| RefDate | Date/Time | Date of the order. | Date format: DD/MM/YYYY | 4/4/2003 |
| RefTime | Date/Time | Time of the order. | | 10:51:02 |
| RefTimeMsec | Numeric | Milliseconds for the time of the order. | Time format: MMM | 793 |
| BondCode | Text | ISIN number of the bond. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. The bond code can be used as a master key to link to other files. | BE0000286923 |
| BondType | Text | Segment of the traded bond. | Please refer to Appendix B for a list of possible values. | OLO |
| OrderSeqNo | Double | Sequence number of the order. | | 1000507 |
| OrderStatus | Text | Processing status of the order. | Possible values:<br>CF – Completely filled;<br>PF – Partially filled;<br>ZF – Zero Filled;<br>ZA – Zero Filled (auto-application); | CF |
| Verb | Text | Sign of the order (referring always to the participant who submits the order). | Possible values:<br>0 = Buy,<br>1 = Sell. | 1 |
| Price | Double | Order price. | | 111.32 |
| Quantity | Double | Order quantity. | | 10,000,000 |
| FillNo | Double | Number of contracts generated by this order. | Orders are requests to trade against a proposal. If they are matched, they generate one or more fills. | 1 |

### *4.3. Audit Trail Proposals (*At_Proposals*)*

| *Variable* | *Type* | *Description* | *Notes* | *Example* |
|---|---|---|---|---|
| MarketCode | Text | Market on which the proposal is updated. | Please refer to Appendix C for a list of possible values. | BEL |
| RefDate | Date/Time | Trading date | Date format: DD/MM/YY | 1/4/2003 |
| UpdTime | Date/Time | Time of proposal update. | Time format: HH:MM:SS | 15:10:59 |
| UpdTimeMsec | Numeric | Milliseconds for the update time. | Time format: MMM | 985 |
| EndTime | Date/Time | End Time for the proposal (i.e. a proposal is valid only between its UpdTime and its EndTime). | Time format: HH:MM:SS | 15:12:16 |
| EndTimeMsec | Numeric | Milliseconds for the end time. | Time format: MMM | 67 |
| BondCode | Text | ISIN code of the bond. | This code normally corresponds to the ISIN code. For bonds available on the same platform with different configurations (e.g. BuySellBack vs. Classic Repo), the last char of the ISIN code (that is a checksum char) is transformed into a letter. | BE0000286923 |
| BondType | Text | Segment of the bond. | Please refer to Appendix B for a list of possible values. | OLO |
| Check_Logon | Numeric | The status of the operator. | Possible values:<br>0 = Active,<br>1 = Suspended.<br>If the Operator is suspended then the proposal is suspended and not visible to the market. | 0 |
| SettlDate | Date/Time | Settlement date. | Date format: DD/MM/YYYY | 4/4/2003 |
| SettlDays | Double | Days for the settlement. | | 6 |
| Status | Numeric | Status | Possible values:<br>0 = Active,<br>1 = Suspended.<br>If the status is suspended, then the proposal is suspended and not visible to the market. | 0 |
| BidPrice | Double | Bid price. | | 111.84 |
| BidQty | Double | Hidden (*block*) bid quantity. | | 10,000,000 |
| BidEbmQty | Double | Visible (*drip*) bid quantity in the EuroMTS market. | | 5,000,000 |
| BidDomQty | Double | Visible (*drip*) bid quantity in the domestic market. | | 5,000,000 |
| AskPrice | Double | Ask price. | | 111.88 |

| | | | | |
|---|---|---|---|---|
| AskQty | Double | Hidden (*block*) ask quantity. | | 10,000,000 |
| AskEbmQty | Double | Visible (*drip*) ask quantity in the EuroMTS market. | | 5,000,000 |
| AskDomQty | Double | Visible (*drip*) ask quantity in the domestic market. | | 5,000,000 |
| BidYield | Double | Bid yield as calculated. | Populated only when the instrument is yield quoted. | . |
| AskYield | Double | Ask yield as calculated. | Populated only when the instrument is yield quoted. | . |

# 1. Appendix A

Repo Terms and Description

This table lists and describes the repo terms. For each term, it also provides details on trading times and days to settlement for the spot and forward legs of the repo contract. The last column indicates whether business days or calendar days are considered when computing the number of days. The collateral for each repo contract can be either special or general. Note that CLE is Clearnet, LCH is the London Clearing House and ESP is the Bank of Spain, which acts as the Spanish depository.

| *Term* | *Term Description* | *Days to Settlement* | *Trading Days* | *End of Trading Day* | *End of GC Cut-off Time* | *Date Type B= Business Days C= Calendar Days* |
|---|---|---|---|---|---|---|
| OP1 | POLISH OVERNIGHT 1 | 0 | 1 | 12:00:00,00 | 12:15:00,00 | B |
| OS1 | SPANISH OVERNIGHT 1 | 0 | 1 | 12:45:00,00 | 13:00:00,00 | B |
| ON1 | OVERNIGHT 1 | 0 | 1 | 15:30:00,00 | 15:45:00,00 | B |
| TNL | TOMORROW NEXT LCH | 1 | 1 | 13:00:00,00 | 13:15:00,00 | B |
| TNP | TOMORROW NEXT PLN | 1 | 1 | 16:45:00,00 | 17:00:00,00 | B |
| TNS | TOMORROW NEXT ESP | 1 | 1 | 17:15:00,00 | 17:30:00,00 | B |
| TN | TOMORROW NEXT | 1 | 1 | 18:30:00,00 | 18:45:00,00 | B |
| SNP | SPOT NEXT PLN | 2 | 1 | 16:45:00,00 | 17:00:00,00 | B |
| SNS | SPOT NEXT ESP | 2 | 1 | 17:15:00,00 | 17:30:00,00 | B |
| SNL | SPOT NEXT LCH | 2 | 1 | 18:00:00,00 | 18:15:00,00 | B |
| SN | SPOT NEXT | 2 | 1 | 18:30:00,00 | 18:45:00,00 | B |
| CNS | CORPORATE NEXT | 3 | 1 | 17:15:00,00 | 17:30:00,00 | B |
| CNL | CORPORATE NEXT | 3 | 1 | 18:00:00,00 | 18:15:00,00 | B |
| CN | CORPORATE NEXT | 3 | 1 | 18:30:00,00 | 18:45:00,00 | B |
| OP2 | POLISH OVERNIGHT 2 | 0 | 2 | 12:00:00,00 | 12:15:00,00 | B |
| ON 2 | OVERNIGHT 2 | 0 | 2 | 15:30:00,00 | 15:45:00,00 | B |
| OP3 | POLISH OVERNIGHT 3 | 0 | 3 | 12:00:00,00 | 12:15:00,00 | B |
| ON 3 | OVERNIGHT 3 | 0 | 3 | 15:30:00,00 | 15:45:00,00 | B |
| T1WP | TOM ONE WEEK PLN | 1 | 7 | 16:45:00,00 | 17:00:00,00 | C |
| T1WS | TOM ONE WEEK ESP | 1 | 7 | 17:15:00,00 | 17:30:00,00 | C |
| S1WP | SPOT ONE WEEK PLN | 2 | 7 | 16:45:00,00 | 17:00:00,00 | C |
| S1WS | SPOT ONE WEEK ESP | 2 | 7 | 17:15:00,00 | 17:30:00,00 | C |
| S1WL | SPOT ONE WEEK LCH | 2 | 7 | 18:00:00,00 | 18:15:00,00 | C |
| S1W | SPOT ONE WEEK | 2 | 7 | 18:30:00,00 | 18:45:00,00 | C |
| 1WS | ONE WEEK ESP | 3 | 7 | 17:15:00,00 | 17:30:00,00 | C |
| 1WL | ONE WEEK LCH | 3 | 7 | 18:00:00,00 | 18:15:00,00 | C |
| 1W | ONE WEEK | 3 | 7 | 18:30:00,00 | 18:45:00,00 | C |
| T2WP | TOM TWO WEEKS PLN | 1 | 14 | 16:45:00,00 | 17:00:00,00 | C |
| T2WS | TOM TWO WEEKS ESP | 1 | 14 | 17:15:00,00 | 17:30:00,00 | C |
| S2WP | SPOT TWO WEEKS PLN | 2 | 14 | 16:45:00,00 | 17:00:00,00 | C |
| S2WS | SPOT TWO WEEKS ESP | 2 | 14 | 17:15:00,00 | 17:30:00,00 | C |
| S2WL | SPOT TWO WEEKS LCH | 2 | 14 | 18:00:00,00 | 18:15:00,00 | C |

| | | | | | | |
|---|---|---|---|---|---|---|
| S2W | SPOT TWO WEEKS | 2 | 14 | 18:30:00,00 | 18:45:00,00 | C |
| 2WS | TWO WEEKS ESP | 3 | 14 | 17:15:00,00 | 17:30:00,00 | C |
| 2WL | TWO WEEKS LCH | 3 | 14 | 18:00:00,00 | 18:15:00,00 | C |
| 2W | TWO WEEKS | 3 | 14 | 18:30:00,00 | 18:45:00,00 | C |
| T1MP | TOM ONE MONTH PLN | 1 | 31 | 16:45:00,00 | 17:00:00,00 | C |
| S1MP | SPOT ONE MONTH PLN | 2 | 31 | 16:45:00,00 | 17:00:00,00 | C |
| S1MS | SPOT ONE MONTH ESP | 2 | 31 | 17:15:00,00 | 17:30:00,00 | C |
| S1ML | SPOT ONE MONTH LCH | 2 | 31 | 18:00:00,00 | 18:15:00,00 | C |
| S1M | SPOT ONE MONTH | 2 | 31 | 18:30:00,00 | 18:45:00,00 | C |
| 1MS | ONE MONTH ESP | 3 | 31 | 17:15:00,00 | 17:30:00,00 | C |
| 1ML | ONE MONTH LCH | 3 | 31 | 18:00:00,00 | 18:15:00,00 | C |
| 1M | ONE MONTH | 3 | 31 | 18:30:00,00 | 18:45:00,00 | C |
| 2MS | TWO MONTHS ESP | 3 | 62 | 17:15:00,00 | 17:30:00,00 | C |
| 2ML | TWO MONTHS LCH | 3 | 62 | 18:00:00,00 | 18:15:00,00 | C |
| 2M | TWO MONTHS | 3 | 62 | 18:30:00,00 | 18:45:00,00 | C |
| S2MS | SPOT TWO MONTHS ESP | 2 | 63 | 17:15:00,00 | 17:30:00,00 | C |
| S2ML | SPOT TWO MONTHS LCH | 2 | 63 | 18:00:00,00 | 18:15:00,00 | C |
| S2M | SPOT TWO MONTHS | 2 | 63 | 18:30:00,00 | 18:45:00,00 | C |
| 3MS | THREE MONTHS ESP | 3 | 90 | 17:15:00,00 | 17:30:00,00 | C |
| 3ML | THREE MONTHS LCH | 3 | 90 | 18:00:00,00 | 18:15:00,00 | C |
| 3M | THREE MONTHS | 3 | 90 | 18:30:00,00 | 18:45:00,00 | C |
| S3MS | SPOT THREE MO. ESP | 2 | 91 | 17:15:00,00 | 17:30:00,00 | C |
| S3ML | SPOT THREE MO. LCH | 2 | 91 | 18:00:00,00 | 18:15:00,00 | C |
| S3M | SPOT THREE MONTHS | 2 | 91 | 18:30:00,00 | 18:45:00,00 | C |
| S6MS | SPOT SIX MONTHS ESP | 2 | 182 | 17:15:00,00 | 17:30:00,00 | C |
| S6ML | SPOT SIX MONTHS LCH | 2 | 182 | 18:00:00,00 | 18:15:00,00 | C |
| S6M | SPOT SIX MONTHS | 2 | 182 | 18:30:00,00 | 18:45:00,00 | C |
| 6MS | SIX MONTHS ESP | 3 | 182 | 17:15:00,00 | 17:30:00,00 | C |
| 6ML | SIX MONTHS LCH | 3 | 182 | 18:00:00,00 | 18:15:00,00 | C |
| 6M | SIX MONTHS | 3 | 182 | 18:30:00,00 | 18:45:00,00 | C |

## 2. Appendix B

Possible Bond Types:

| | |
|---|---|
| ABS | Corporate Bonds |
| ACS | Irish Covered Bonds |
| ATS | RAGB Austria |
| BBB | Buy Back Belgium |
| BNI | Inflation Linked BTA |
| BON | Bono Spain |
| BOT | Italian Zero Coupon |
| BPL | Bel. Philippe Loan |
| BPO | Belgium Strip |
| BRA | Rep. of Brazil |
| BSD | Buy Sell Back Ger |
| BTA | France |
| BTC | Belgian Zero Coupon |
| BTP | BTP |
| BTi | BTP-Indexed |
| BUE | Bulgarian Republic |
| CAL | Cades |
| CBM | Corporate Benchmarks |
| CC | Italian Concambio |
| CCA | Italian Conc. (Back) |
| CCB | Italian Conc. (Back) |
| CCT | CCT |
| CDL | Cedulas (Eurocr ESP) |
| CFI | Corporate Financials |
| CRH | CRH |
| CRO | Rop. Of Croatia |
| CTZ | Italian Zero Coupon |
| CUP | Coupon ESP |
| CYP | Republic of Cyprus |
| CZE | Czech Republic |
| DBB | Danish Buy Back |
| DCB | Dutch Covered Bonds |
| DEL | Depfa Liquid |
| DEM | German Bonds |
| DEP | Depfa |
| DKB | Danish Benchmark Sec |
| DKL | Danisj Liquid Sec |
| DKT | Danish Zero Coupon |
| DSL | Dutch Bonds |
| DTC | Dutch Zero Coupon |
| EIB | EIB |
| EIL | EIB Liquid |
| EMB | Emerging Markets Bonds |
| ERL | ERAP |
| FBB | Finland Buy Back |
| FCO | French Coupon |
| FPO | French Principal |
| FRD | Freddie Mac |
| FRL | Freddie Mac Liquid |
| FTB | French Zero Coupon |

| | |
|---|---|
| GBI | Greek Indexed |
| GCA | G.C. Austria |
| GCB | G.C. Belgium |
| GCD | G.C. Germany |
| GCE | G.C. Spain |
| GCF | G.C. France |
| GCF | G.C. France BSB |
| GCG | G.C. Greece |
| GCH | G.C. Germany BS |
| GCI | G.C. Italy |
| GCL | G.C. Ireland |
| GCN | G.C. Netherlands |
| GCP | G.C. Portugal |
| GCR | G.C. Finland |
| GCZ | G.C. Poland |
| GGB | Greece |
| GIL | German Inflation Lin |
| GTC | German Treasury Cert |
| HUN | Republic Of Hungary |
| ICB | Italian Covered Bond |
| INT | INT Coup. Stripping |
| IRL | Irish Bonds |
| KFL | KFW Liquid |
| KFW | KFW |
| KOD | Kingdom Of Denmark |
| LAN | Lander Bonds |
| LET | Letras-Spanish Bills |
| LIT | Rep. Of Lithuania |
| MEX | U.S.Of Mexico |
| NBB | Buy Back Netherlands |
| NBD | New Bond Denmark DKK |
| NRW | NRW Bank |
| OAI | France |
| OAT | France |
| OBE | OBLE Spain |
| OBF | Foncier Fr |
| OLO | Belgian OLOs |
| ONS | Franc.Non Governativ |
| PBB | Portuguese Buy Back |
| PCB | Polish Conversion B. |
| PFI | Polish Fixed Rate |
| PFL | Polish Floating Rate |
| PFN | Pfandbrief |
| PFX | Polish Inflation Lin |
| POL | Poland |
| PRI | PRI Coup.Stripping |
| PRL | Principal ESP |
| PTB | Polish Treasury bills |
| PTC | POR Treasury Certificate |
| PTE | Portugal |
| PTV | Portugal T.V. |
| PZC | Polish Zero Coupon |
| QSI | Quasi Government |
| QSL | Quasi Govt Liquid |
| RFG | Finland Bonds |
| ROM | Rep. Of Romania |

| | |
|---|---|
| RSL | Republic Of Slovenia |
| SAF | Rep Of South Africa |
| SHA | Israel Gov Bond |
| SVK | Slovak Republic |
| SWL | Swedish Liquid |
| TEC | France |
| TND | Taps Nether. DSL |
| TUR | Rep. Of Turkey |
| UKC | UK Covered Bonds |
| UNL | Unedic |
| USA | Dollar Agencies |
| USQ | Dollar Quasi |
| UST | UST Treasury |
| VNZ | Venezuela |

## 3. Appendix C

Possible Market Codes:

| | |
|---|---|
| ATS | MTS Austria |
| BEL | MTS Belgium |
| CDL | MTS Cedulas |
| DKK | MTS Denmark |
| EBM | European Bond Market |
| ESP | MTS Spain |
| FIN | MTS Finland |
| FRF | MTS France |
| GEM | MTS Deutschland |
| GGB | MTS Greece |
| IRL | MTS Ireland |
| ISR | MTS Israel |
| MTS | MTS Italy |
| NEU | NewEuroMTS |
| NLD | MTS Amsterdam |
| PLN | MTS Poland |
| PTE | MTS Portugal |
| RSL | MTS Slovenia |
| TRS | Treasury operations |
| XEU | EuroGlobalMTS |